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POLLUTION CONTROL



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Pollution Control

The Department of the Environment was created under the Government Organization Act and officially came into being on June 11, 1971. Many of the Department's components were brought together from existing departments, such as Fisheries and Forestry, Energy, Mines and Resources, National Health and Welfare, Regional Economic Expansion, Indian Affairs and Northern Development, and the Department of Transport. The Department was given the responsibility for "environmental quality", and for the protection and enhancement of the country's renewable resources, and the encouragement of their wise use.

Recognizing the need to tackle pollution problems seriously, the Government assigned this task to the Environmental Protection Service (EPS). In addition to responsibility for "problem surveillance" and pollution-control in the water and in the air, EPS is charged with management of solid waste, the control and disposal of environmental contaminants, control of activities having an environmental effect, operation of an emergency pollution-control centre and management of the federal clean-up program.

In carrying out these tasks, EPS maintains close liaison with the provincial governments and with industry. Its activities are carried out by three directorates: Water-Pollution Control, Air-Pollution Control and Environmental-Impact Control.

Water-Pollution Control Directorate

The quality of Canada's waters has, over many years, deteriorated to the point where corrective action is vital. This deterioration is attributable to urban development and industrial growth, which have occurred in relatively confined areas with little or no concern for their effect on the environment.

To combat the decline in water quality, the Water-Pollution Control Directorate administers a national program the object of which is to clean up existing pollution and prevent pollution from new sources in order to maintain a level of water-quality suitable for the protection of fish, for recreational activities and for drinking. Attainment of this object requires the co-operation of the federal and provincial governments, as well as industry.

Legislation in use

The main legislative instrument in the fight against water pollution is the Fisheries Act of Canada, enacted more than 100 years ago, which was designed to protect fish and their use by man. In recent years, this legislation has been found to have limited power to deal with modern pollution.

Revisions of the act passed in 1970 by Parliament have enabled EPS to enforce the clean-up of many of Canada's major sources of industrial pollution. Further provisions enacted in 1977 strengthened the pollution-control aspects of the act.

These amendments allow for broader and more practical control of existing industrial pollution.

Other legislation provides the means for combating certain types of water pollution. For example, the Canada Water Act contains provisions for the control of nutrients, such as phosphates contained in laundry detergents, that stimulate excessive growth of aquatic vegetation. The Canada Shipping Act provides for the control of pollution by ships in Canadian waters. The Environmental Contaminants Act is designed to protect human health and the environment from harmful substances, and the Ocean Dumping Control Act regulates the dumping and disposal of waste and other materials in the ocean.

Strategy

Since the effects of some wastes on the environment are imperfectly understood, the federal policy for their control is to contain pollutants at their source.

Effluent-control requirements, in the form of regulations, guidelines and codes of "good practice" are being developed and implemented under the Fisheries Act on an industry-by-industry basis, with the aim of reducing existing pollution and preventing further degradation of the environment. The requirements, developed in consultation with the provinces and with industry,

are based on pollution-control technology that has been shown to be both effective and economical. The control requirements are applied uniformly across Canada, thus eliminating the possibility of "pollution havens" by imposing standard minimum requirements on companies of a particular type no matter where they are situated.

Existing controls

Under the Fisheries Act, effluent controls have been developed as a matter of priority, the major sources of pollution being attacked first. Priorities are under continuing review; program emphasis shifts as needs change.

Up to now, effluent-control requirements have been developed and are being implemented for the following industrial sectors: pulp and paper, chlor alkali mercury, petroleum-refining, fish-processing, base-metal mining, meat and poultry, potato-processing and metal-finishing.

Under the National Water-Pollution Control Program, it is expected that effluent-control requirements governing the discharge of up to 29 industrial sectors will be in force by 1980.

New technology

In the fight against water-pollution, the basic national requirements must be kept under continuous review and

revised as improved technology becomes practicable, or as the "state of the art" advances.

At the EPS Wastewater Technology Centre, Burlington, Ontario, studies are carried out to find new and improved waste-water treatment processes to deal with pollution problems, to develop new technology and equipment for pollution-control and to adapt foreign technological developments to Canadian problems. The Northern Technology Centre at Edmonton deals with similar problems as they affect northern communities and industries.

Other activities

Water-pollution control programs are also conducted under federal-provincial and international agreements. Examples of this type of activity are the Canada-Ontario Agreement for the Clean-up of the Great Lakes and the Canada/United States Agreement on Great Lakes Water Quality, the Canada/British Columbia Okanagan Implementation Program and the Canada-Saskatchewan Subsidiary Agreement on the Qu'Appelle River Valley.

There is nothing new about air-pollution. Man was aware of it even before the industrial revolution – as far back, indeed, as the fourteenth century, when coal was first used for heating purposes. The scale and intensity of air-pollution in our time are, however, new. Air is polluted when it contains contaminants (solid, liquid, gas or odour) that may be harmful to humans, animals or vegetation.

In broad terms, the federal air-pollution control program has as its aims the definition of the problem, the promotion of desirable levels of air-quality and the control of harmful emissions. As with water-pollution control, the co-operation of federal and provincial authorities with one another, and with industry, is essential.

The legislative instrument of the control program is the Clean Air Act of 1971. Under this act, the Federal Government can regulate emissions of air-contaminants considered harmful or in violation of an international agreement. In addition, the Clean Air Act empowers the Federal Government to regulate the composition of fuels or fuel additives, as well as emissions from all businesses, works and undertakings under federal jurisdiction.

A Federal-Provincial Committee on Air-Pollution is the principal formal mechanism for obtaining federal-provincial co-operation and

ensuring the participation of all who wish to join their efforts in specific projects. This is a working committee of senior air-pollution control officials representing the federal and all ten provincial governments.

Quality of air

The Clean Air Act authorizes the development of air-quality objectives for specific contaminants, based on a three-level approach. A *maximum desirable level* defines the long-term goal for air-quality and provides the basis for an anti-degradation policy for those areas of the country where the air is not contaminated. At this level there is no detectable adverse effect on any reception. A *maximum acceptable level* represents the realistic objective today for all parts of Canada and is intended to provide adequate protection against effects on soil, water, vegetation, materials, animals, visibility and personal comfort and well-being. A *maximum tolerable level* denotes a concentration of an air-contaminant that may lead to a substantial threat to public health if there is further deterioration in air-quality.

National air-quality objectives have been promulgated for major air-contaminants such as sulphur dioxide, suspended particles, carbon monoxide, oxidants and nitrogen dioxide, and others are in preparation. These objectives are not in-

tended to be legally enforceable but are being adopted as standards by the provinces. At the desirable and acceptable levels, they are recognized as national goals and as valuable management tools in deciding priorities and evaluating results.

Detection of pollution

The National Air-Pollution Surveillance Network (NAPS) is the means by which air-quality is monitored. It is designed to monitor all locally-significant indications of air-pollution in all important centres of population. To make this possible, there are 556 instruments in 157 stations located in 54 cities. Data from NAPS have been available only since 1970, but preliminary indications are that the level of air-pollution is decreasing in many of the major urban areas of Canada.

The NAPS network is an excellent example of federal-provincial co-operation. The provincial agencies, for the most part, operate the monitoring stations and report the data to the Federal Government. The federal role includes the provision of technical advice, the supplying on loan of the instrumentation, instrument-maintenance and calibration and the quality-control of data.

Means of control

The approach of the Canadian Government to air-pollution control involves containment based on the best practicable technology for preventing emissions at their source. When such technology will not ensure acceptable air quality (as in heavily-industrialized areas), an air-resource management approach is necessary as a supplementary measure.

In the interest of containment at source, national emission guidelines have been and are being promulgated for a number of industry sectors such as cement plants, coke ovens, asphalt-mixing plants and pulp-and-paper mills.

Federal regulations are in effect that control pollutants considered potentially hazardous to health – mercury, asbestos, lead and vinyl chloride. Regulations are under development for arsenic as well.

Vehicles as polluters

Motor-vehicles are the main source of air-pollution, accounting for an estimated 60 per cent of this problem in urban areas.

Canada's regulations for the control of motor-vehicle emissions are promulgated under the Motor Vehicle Safety Act of the Government of Canada. They apply to new vehicles offered for sale in Canada. Other

vehicles are the responsibility of the provinces.

The main targets of the regulations are hydrocarbons, carbon monoxide and nitrogen oxides. However, lead and phosphorus content in lead-free and unleaded gasolines is regulated separately.

Mobility of air

The long-range transport of air-pollutants is not a new phenomenon but has in recent times become a matter of greater concern than previously, largely because of the increase in industrial activity and the resulting increase in pollution of the air from factory chimneys. Since air knows no boundaries but moves with the changing winds, much co-operation is necessary to control air-pollution – not only federal-provincial co-operation but international as well.

All provinces have air-pollution control legislation and are designing programs to reduce pollution from existing sources and limit it from new sources.

Environmental-Impact Control Directorate

The third arm of the Environmental Protection Services is the Environmental-Impact Control Directorate, which consists of four branches, each of which deals with separate environmental-protection or pollution-control problems.

The Contaminants Control Branch has, as its principal control instrument, the Environmental Contaminants Act, proclaimed April 1, 1976. This legislation is designed to protect human health and the environment from substances that contaminate the latter. Any quantity or concentration of a substance the Government believes might be a significant danger to human health or to water, air, land and plant or animal life may be controlled by this act, which stipulates that companies importing, handling or using certain substances in manufacturing processes must report to the Government the amounts involved, the toxicity, dispersion in the environment and concentration.

The Minister of National Health and Welfare is responsible for the human-health aspects of the act, the Minister of the Environment for its environmental aspects and the Environmental Contaminants Control Branch for its general administration.

Substances identified as dangerous may be the subject of Government regulations controlling: (1) the general release of the chemical to the environment; (2) dangerous uses of

the chemical and (3) products that contain the chemical. The Chlorobiphenyls Regulation No.1 was published in the *Canada Gazette* on February 26, 1977. *Gazette* notices were also published requiring all those engaged in the manufacture, sale or use of Polychlorinated Biphenyls (PCBs), Polychlorinated Terphenyls (PCTs), Polybrominated Biphenyls (PBBs) or Mirex to notify the Minister of Fisheries and the Environment.

The Environmental Emergency Branch has the jobs of preventing spills that might cause environmental damage, developing contingency plans for dealing with them when they occur, and developing new technology for cleaning them up and responding to them in order to ensure rapid and environmentally-safe clean-up and disposal of the substances spilt.

Each year, the Branch's National Environmental Emergency Centre receives hundreds of reports of spills of petroleum products or other hazardous contaminants. Each of these is followed up to ensure that the environment is protected as much as is possible. The details of the more serious spills are recorded in the computer-base of the National Analysis of Trends in Emergencies System in order that their causes may be analyzed with a view to preventing their recurrence.

A key component in response to spills is the computerized National Emergency Equipment Locator System, which helps those responsible for the clean-up of spills to find suitable equipment as close as possible to their locations. Since the system contains a list of most of the spill-fighting equipment in Canada (and some U.S. equipment), it is most useful in dealing with large spills.

The branch is currently directing a substantial program of research and development for new oil-spill counter-measure technology – especially technology that may be used under Arctic clean-up conditions. Contingency plans for dealing with spills are being developed in co-operation with the provinces and territories, and training seminars on environmental emergency procedures are provided for field personnel.

The activities of the Waste-Management Branch are directed towards reducing or preventing the adverse effects on health and the environment of faulty waste-management practices and encouraging resource-recovery and -conservation. Branch projects include a review of the feasibility of a waste-rubber recovery program on the Prairies, involving the recycling of used tires as highway-paving material and the first national examination of the carbonated-beverage container industry.

At the grass-roots level, the branch initiated "Project Conservation", which involves the collection of high-quality office waste-paper in departmental buildings in Hull and Ottawa for sale to a firm specializing in the recycling of such material. The branch manages Development and Demonstration of Resource and Energy Conservation Technology, a program aimed at encouraging the expansion of waste-management and resource-conserving technology. The costs of DRECT are shared, where appropriate, with industry, with the provinces and with municipalities. The federal contribution is assessed according to the appropriateness of the project to national and departmental priorities and the size and timing of the returns.

Other activities of this branch are: the monitoring of sanitary-landfill sites; training and guidelines development in solid-waste management for provincial, municipal and industrial officials; the regular updating of a comprehensive directory of Canadian activities in the sphere of waste-management; and advice on waste-disposal to government agencies, industry and other parties.

The Federal Activities Branch has four functions: (1) to ensure that new activities initiated by, financed by or under the jurisdiction of the Federal

Government are environmentally acceptable; (2) to implement remedial measures for major environmental problems attributable to federal activities existing on June 8, 1972; (3) to ensure environmental protection from existing and proposed nuclear projects; (4) to ensure the protection of the environment from noise pollution.

The Ecological Impact Control (Prevention) program has a major responsibility for responding to the Government's process for screening initial environmental evaluations, assisting with environmental-assessment and review-process panel projects, and subsequent implementation of control and monitoring requirements affecting new federal operations.

The Federal Activities Clean-Up Program consists of the assessment of environmental problems associated with existing federal facilities, the provision of environmental engineering advice to other federal departments, and assurance of the implementation of remedial action for control and abatement of identified pollution problems.

The branch provides technical consultation and advice concerning nuclear programs and nuclear-impact evaluation for environmental radiation protection, the nuclear-fuel cycle, and the appropriateness of licensing nuclear facilities in relation to the protection of the environment.

The Noise Control Program involves the provision of technical information, advice and recommendations to various levels of government, as well as the private sector, on the effects of noise.

Federal assistance for pollution-control

There are a number of federal financial incentives to encourage industry to help solve pollution problems. Three of the programs that have such terms of reference are:

The Co-operative Pollution Abatement Research program, established in August 1970 by the Federal Government, in co-operation with the Canadian pulp-and-paper industry, to develop improved technology for the reduction of pollution from pulp-and-paper operations. The program provides 100 percent financing of approved research into water or air-pollution.

The Development and Demonstration of Pollution-Abatement Technology program is intended primarily to help Canadian industries and municipalities develop and demonstrate new methods, procedures, processes and equipment for the prevention, elimination or reduc-

tion of the release of pollutants into the environment. DPAT pays a percentage of the capital and operating costs of applying new and improved abatement technology to industry.

Under this program, the Federal Government enters into contracts with individual firms to develop, test and demonstrate new technology. The contractor must ensure that all technical details, patents and process technology developed under DPAT will be made available, without royalties or license fees, to Canadian organizations and industries having similar pollution problems.

The Accelerated Capital Cost Allowance is a third program designed to encourage businesses to control pollution. Under its terms, an eligible taxpayer may write off, over a two-year period, the total cost of equipment or processes installed for the prime purpose of controlling air- and water-pollution. The expenditures eligible for write-off may cover the costs of prevention, reduction or elimination of pollution.

Conclusion

The Environmental Protection Service combines control legislation with financial incentives and co-operation with industry and provincial governments to achieve improvement of the environment. The key to successful pollution-control programs is co-operation, not compulsion. Both a healthy economy and a healthy environment are essential to Canada. The aim of EPS is to maintain a balance between these two essential ingredients.



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